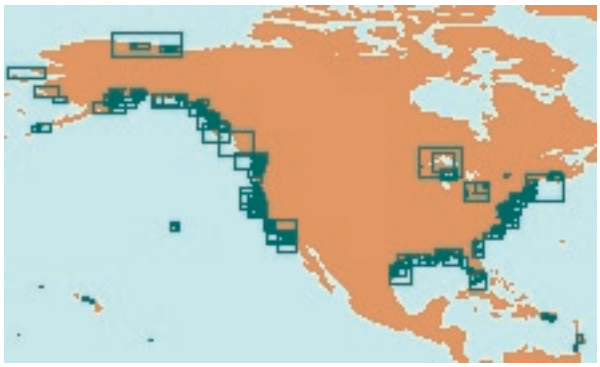
NOAA Oil Spill Modeling

NOAA's Hazardous Materials Response Division continues to support the U.S. Coast Guard and other members of the Unified Command, responding to more than 1,600 oil and hazardous chemical spills in the U.S. and abroad since the Argo Merchant. We've used this experience to develop advanced spill trajectory models and build a spill trajectory forecasting team with worldwide experience.

Spill Forecasting...

When a spill occurs, every aspect of the response depends on projections of where winds and currents will take the oil. Millions of dollars in response costs and potential damage claims can depend on the ultimate fate of oil movement. Oil spill forecasting requires a detailed knowledge of oil release dynamics, oceanography, meteorology, oil chemistry, and oil slick observations. This is a difficult task and not a job for amateur forecasters.



We receive about 110 requests for assistance per year, so we are likely to have already modeled spills in your location (see map inset for locations in the U.S. for which we've made forecasts).

Any forecast is only as good as the information used to make it. We work with our colleagues elsewhere in NOAA and around the country to rapidly obtain the best possible real-time weather, tide, and current observations, and forecast as well as any other relevant oceanographic data. To prepare our forecasts, we account for local variations, such as the Mississippi River freshwater lens, Texas coastal current reversal, seasonal variation in the Davidson Current, and convergence zones in Cook Inlet, Alaska. We use our contacts with oceanographers in every region of the country to gain more detailed knowledge of current local conditions when necessary.

Our Models...

Our General NOAA Oil Modeling Environment (GNOME) uses current patterns specific to the spill area (often the most critical component in accurate forecasts), prepared from on-scene environmental observations. GNOME also provides information on how uncertain a forecast might be, not just the "best guess" of simpler models. Knowing uncertainty is important because all forecasts are influenced by unpredictable events. For example, a forecast weather change could be late or freshwater runoff could displace tides. Only GNOME shows a forecast's confidence limits based on uncertainty in weather predictions and other factors.

In a simpler mode, GNOME guides users in modeling spill trajectories for specific planning scenarios. A desktop version of GNOME is available free via the Internet. Users will get site-specific current patterns, so that they can build forecasts for scenario games, and drills. GIS users can obtain GIS-compatible output from GNOME.

Our oil weathering model, ADIOS™2, includes a database of 1,500 oils; users can also add spill-specific oil properties to the model. ADIOS2 helps to identify essential oil property changes that could affect the deployment of response resources such as dispersants.

What We Can Do for You...

Our spill response professionals are on call 24 hours each day, ready to help you. Our standard is to provide a first forecast within 30 minutes of a request–faster than you can reliably run a simple model. We then update our forecasts as more information becomes available. Trajectory forecasting

requires more than models: it also requires understanding the response organization's needs and the limits of available information. Our team understands these needs and stands behind our forecasts. If something goes wrong, we take responsibility and fix the problem.

HAZMAT spill forecasts are available through any NOAA Scientific Support Coordinator, or you can call our 24-hour number: 206/526-6317. We also provide drill and area plan support.

For additional information, visit the website:
http://response.restoration.noaa.gov
or send e-mail: orr.gnome@noaa.gov
or call: 206/526-6317.

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